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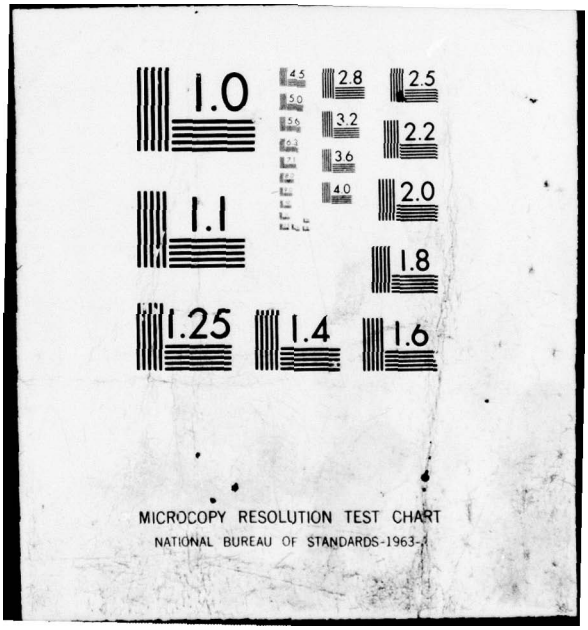
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AFFILIATION	LABELLING	INTERVENTION/THERAPY
PERSON PERCEPTION	PLACEBO EFFECT	VERBAL FLUENCY (see reverse page)

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

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20. Abstract (continued)

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Modifying shyness-related social behavior through symptom misattribution[1]

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Abstract

An experimental misattribution paradigm proved to be a powerful intervention treatment for altering social participation among dispositionally shy women. When the arousal symptoms they usually associated with social anxiety were misattributed to a non psychological source, high frequency noise, these extremely shy women behaved as if they were not shy. Their verbal fluency and interactional assertiveness resembled that of not-shy comparison women, while differing significantly from shy cohorts. In addition, their physiological arousal, measured as change in heart rate over the course of the interaction, declined. The general modification of their demeanor was also reflected in a stronger tendency to prefer social affiliation than was shown by those in the shy and not-shy comparison groups. Finally, the majority were misjudged by their male partner as not being shy. Of further interest is the placebo effect discovered among the not-shy women also given this same misattribution manipulation: they became physiologically aroused, interpreted it as negative affect and did not prefer to affiliate with their partner. The conceptual and pragmatic implications of this cognitive intervention strategy are discussed.

Modifying shyness-related social behavior

through symptom misattribution

When we experience strong emotions, we perceive a set of correlated occurrences. It is likely that we are physiologically aroused and become aware of those internal changes if they are sufficiently strong or we are sensitive to such cues or their overt symptoms. In addition, we respond affectively with feeling states, as well as cognitively by generating propositions that may include self-references, situational analysis, memory for prior experiences, expectations about possible consequences, and other beliefs and attitudes. There may also be one or more overt behaviors that occur with regularity as part of the total experience.

To the extent that one's reaction is time-limited and situationally specific, as with grief during the funeral of a loved one, we tend to label the experience and not the person. But when the general experience persists over time, beyond the cultural norms of "temporal appropriateness," the label switches from situational-experiential to dispositional (in this grief example, to "depressed"). The dispositional label is also more likely to be invoked when either the particular form the reaction takes is idiosyncratic and not shared by the majority in the social context, or the person's reactions are trans-situational (consistent over a variety of phenotypically dissimilar settings).

In making dispositional attributions for certain behaviors, we infer personal causality, and thus personal responsibility. We observe this process when a person who is behaving with psychiatric symptoms of mental illness is told to "pull yourself together," and "you'll have no one to blame but yourself, if you don't get over this." Furthermore, the

dispositional label carries with it assumptions that the intensity and perseverance of the reaction are motivationally based rather than stimulus bound. Indeed, when either actor or observer is unable to generate the antecedent stimulus conditions that are necessary and sufficient to cause the reaction, this "unexplained arousal" implicates the individual as the causal agent. (Interestingly, phobic anxiety occupies a middle ground in which observers tend not to make as negative dispositional attributions because there is at least an extrinsic, physical cause invoked even though it is assumed not to be sufficient to the effect).

An understanding of the correlational analysis we make when observing our reactions and the causal attributions we generate when theorizing about those correlations has important conceptual and pragmatic consequences. Although intellectually we may know that "correlations do not imply causation," when they are ego-centered correlations we are likely to act on the belief that they do, until proven otherwise. In attempting to make sense of our own anomalous reactions or discontinuities in arousal, affect or cognitive functioning, we seek two sources of information: rational-causative and normative-social. The question, "is there a reasonable explanation for why this is happening?" directs a search process that seeks responsible antecedents and discrete causal stimuli. The question "why is this happening to me?" directs a different search. One wants to discover whether other people are responding similarly, even if there is not an adequate explanatory account available. This normative search is obviously limited where the individual is a social isolate. The causal search is likewise biased by

culturally available explanations, and the use of labels as if they were causal explanations.

Labels aid in the processing of complex information about people. They simplify the process of understanding by categorizing, organizing and summarizing. They can enrich a limited data base by making available stored information in the form of schemas that are usually associated with that label. The contents of the schema then provide a basis for developing expectations, making evaluations and guiding selective exposure to incoming information. Labels and their associated schemas also come to have explanatory and predictive power. For example, when a prison inmate is accused of "unprovoked assault" on a guard, he is on his way to being labelled a "violent person." Such a label leads to explanations of his undesirable behavior in terms of uncontrollable anti-social behavior patterns, unfortunate hereditary influences, adverse rearing conditions and/or defective brain mechanisms. Possible eliciting conditions in the current prison situation are ignored in such a search for "what is wrong with the person." Treatment procedures follow accordingly, with recommendations for isolation of such incorrigibles, insight therapy, brain surgery and other attempts to modify the person rather than to change the prison environment.

The power of labels can be seen in the way they control the perceptions of observers even when the actor's behavior is independent of the label (see Rosenthal & Jacobson, 1968; Farina, et al, 1971, and Rosenhan, 1973). Not only do labels influence the way others behave toward the labelled person, they may come to affect the way the person acts and to distort self perceptions as well (Dunn, 1979).

Once a person is labelled and treated accordingly, his or her behavior may be modified by that treatment so as to validate the initial, perhaps spurious labelling. The concept of self-fulfilling prophesy aptly characterizes this dynamic process. In the innovative research of Snyder, Tanke and Bercheid (1977), this phenomenon has been directly addressed by convincingly demonstrating behavioral confirmation of stereotypes. Males led to believe they were talking to either a physically attractive or unattractive woman induced different types of response in these allegedly different types of people by the way they behaved toward them. Snyder and his colleagues suggest that stereotypes are labels that "create their own social reality" by directing an interaction so as to generate the behavioral evidence needed to confirm the perceiver's stereotype.

The dynamics of a self-fulfilling prophesy gather greater explanatory and predictive force by nature of an oftentimes spurious correlation that follows from the co-occurrence in time of the label and behavior. The label and behavior may erroneously be viewed as a unit--with each component purporting to explain the other (as seen in the research of Chapman and Chapman, 1967, 1969).

Shyness seems to us to represent a model of the correlated syndrome of arousal, self-monitoring of affect, cognitive appraisal, situational analysis and labelling. It is also a disposition continually in search of behavioral confirmation. In social settings with particular characteristics (for example, involving strangers, authority, intimacy, performance evaluation, and lack of structure), the person responds with one or more symptoms of arousal (often increases in pulse, heart rate,

respiration, or blushing) along with avoidance behaviors, notably a reluctance to talk or to initiate social interaction. When such correlations occur repeatedly, a label that links them is "shyness." The label is either proposed as an explanation by observers or may be self generated. Anytime the "shy person" is aroused in a social setting and becomes preoccupied with monitoring his or her internal responses, behavioral spontaneity is constrained and another instance of the shyness disposition is recorded. Eventually, mere anticipation of a "shyness-eliciting" situation is sufficient to generate the composite social anxiety response or schema including the phobic avoidance. For many such people, their lives are organized so as to minimize exposure to shyness-arousing situations. Although they may not experience the situation, the arousal, or its attendant reactions over extended time periods, the shyness label persists nevertheless. Indeed, we have seen clients who at the end of therapy no longer experience their once strong shyness arousal nor the presenting problems which initially brought them to treatment, but still continue to label themselves as "shy." This perseverance may be due in part to the persistence of habitual reactions to the shy person from friends and associates, despite changes in his or her current behavior.

Treatment of shyness has focused upon reinforced feedback for appropriate display of social skills. It also has been directed at reducing the arousal component through relaxation techniques, cognitive rehearsal strategies or by distracting one's arousal (see Zimbardo, 1977). A potentially powerful intervention approach is one that attempts to alter the perceived correlational links between shyness arousal and its

social psychological elicitors. The arousal is neither reduced nor denied as in traditional therapeutic approaches, but redirected to a physical source external to the person. The reformulated link then is one in which a common, normative reaction (not a personal, idiosyncratic state) is alleged to be determined solely by a discrete stimulus event. Essentially, a stimulus-response general law is proposed in which individual differences are perceived as of little or no significance. Once the old correlational link is weakened, behavior may become liberated from its traditional constraints. It is possible then that under these circumstances a once shy individual will come to act in ways indistinguishable from those characterized as non shy.

A major strategy for weakening the link between arousal and its usual determinants is misattribution. Misattribution has been used experimentally as a tool for assessing the power of cognitions in altering behavior (Nisbett & Schachter, 1966; Ross, Rodin & Zimbardo, 1969; Davison and Valins, 1969; Storms and Nisbett, 1970, among others). The misattribution paradigm has consisted of inducing arousal and then providing an alternative explanation (free of anxiety-based components) for the arousal. However, none of these studies has, to our knowledge, utilized strong, naturally occurring chronic arousal in individuals with a well established dispositional label for their situation-arousal-reaction correlations. Nor have they studied changes in socially significant outcome behaviors that have followed upon the symptom misattribution.

In the present study, participants who label themselves as extremely shy, and especially so in the presence of a member of the opposite sex

are placed in just such a social setting. These individuals who normally report the arousal symptoms of increased pulse and heart rate in response to this shyness-inducing situation, will be informed that the source of such arousal symptoms is the presence of high-intensity noise. Their reactions are further described as commonly observed side effects to this physical stimulus. When they next experience this situation that ought to make them feel anxious, it is predicted they will relabel their arousal as a non-psychological reaction, one of noise-induced irritability.

By breaking the naturally occurring correlations between shyness label, arousal symptoms and situational characteristics, more socially responsive social behavior should emerge. Given the usually high level of anxious arousal these individuals typically experience in shyness-eliciting situations, we would also expect a reduction in their arousal over the course of interacting with their partner. If neither the shyness label nor its associated schema is invoked because of the misattribution, the excessive self-monitoring of the shy individuals should diminish, and they should talk more, be aware that they are being appropriately responsive, enjoy the social experience, and thus be less anxiously aroused--despite the bothersome noise. Because the partner-confederate is a stranger, without prior knowledge of any of the participants in the study, his perception of them should be primarily influenced by their current behavior during the interaction. He should judge those who are reticent to carry on a conversation as shy and those who are verbally fluent as not shy. Those in the shy-misattribution group should be perceived as either not shy or only slightly shy due to

their predicted pro-social responding. The positive feedback loop, initiated by misattributing social anxiety, first alters cognitions, affect and social behavior of the shy person, which in turn creates a new reality that their partner responds to favorably. His supportive social perception and interaction should encourage not only further enjoyable participation but modify attitudes of the shy person toward desiring further social affiliation. In this total process, the intensity of the arousal should also be reduced.

The predicted effects will be evaluated against comparison data obtained from two groups: those provided by shy participants from the same population not given the shyness-noise symptom misattribution (given irrelevant information about the side effects of noise) and not-shy women given the identical misattribution linking the induction of arousal symptoms to noise bombardment. We assume the shy comparison group offers a baselevel of low participation while the not-shy group sets an upper boundary of high (or normal) verbal interaction in this situation.

A final consideration is the possibility that the suggested symptoms of increased pulse and heart pounding may be sufficient to induce a state of general arousal among some of the not-shy individuals. If they do experience these symptoms and the arousal persists during the silent periods of the study, the not-shy may interpret their feelings as anxiety. Paradoxically, because they have no imminent distressing social anxiety to "explain away" by the noise-linked symptoms, the not-shy may generalize their arousal beyond the proximal stimulus situation and tap into other anxiety-provoking feelings. Such a conjecture leads to a prediction of their increased physiological arousal and a kind of phobic

anxiety reaction, one in which the noise is perceived of as only partially responsible. A measurable consequence of this anxiety would be a lowered preference for social affiliation. Thus, our study of the effects of the misattribution process on social behavior, cognitions and physiological arousal centers on both shy and non shy people.

Method

Overview

Within the context of a purported study of the effects of noise bombardment on physiological reactions, dispositionally shy women were placed in a shyness-provoking interpersonal situation. Half were led to misattribute the symptoms of their naturally occurring shyness arousal to a neutral, external source--noise. A control group of shy women were misinformed about side effects of the noise. They were given symptoms not typically associated with their shyness arousal. An additional comparison group consisted of women who reported themselves not to be shy in general nor in the specific setting employed in this experiment, a one-on-one opposite sex interaction. Measures of verbal behavior and physiological arousal in the presence of the male partner-confederate were recorded along with selected self-report reactions at the end of the study.

Participants

Forty-five Stanford University undergraduate women participated to fulfill a requirement in their introductory psychology course. Of those who were shy, fourteen were randomly assigned to the shy-misattribution condition and fifteen to the shy-control condition. Sixteen not-shy women served as an additional comparison group. Selection was by means

of responses on the Stanford Shyness Survey (Zimbardo, 1977) given as part of a large survey packet all the students completed early in the term. The participating women were individually contacted and invited to be in a study investigating the effects of noise polution (in the form of acute noise bombardment) on their physiological reactions. They were unaware of the shyness-related basis of their selection. The shyness questionnaire elicits self-reports of four classes of reaction to a range of social situations--physiological, affective, cognitive and behavioral. It also provides information about dispositional attributions of shyness in the form of self-labelling, frequency, intensity and seriousness of the personal experience of shyness.

Shy women. Shy women were selected for participation if they satisfied four criteria. First, they considered themselves shy, that is, on the questionnaire they selected as an appropriate self-description, "I am a shy person." Second, on a six-point continuum of intensity of shyness, they were extreme, between "quite shy" and "extremely shy." Two additional selection criteria were utilized to help tailor the specific features of our experimental situation to the participant's symptoms associated with shyness arousal. Among a set of situations that were potentially shyness-arousing, the shy women ranked highly (4 or 5, where 5 = most arousing), "one-to-one interaction with a person of the opposite sex." Finally, the shy participants were selected if they ranked the physiological reactions of "heart pounding" and "increased pulse" as most typically associated with their feelings of shyness, but "dry mouth" and "tremors" as atypical.

Those in the misattribution condition were led to believe that common side effects of noise bombardment were heart pounding and increased pulse--the symptoms they have come to associate with the experience of shyness. By contrast, shy control women were led to believe that the noise side affects were "dry mouth" and "tremors," clearly uncommon correlates of their shyness.

Not shy women. The two criteria for selection of the not-shy women were their choice of "not shy person" as the appropriate questionnaire response and their further indication of never feeling more than "only slightly shy." These criteria thus selected for extremely shy as well as extremely not-shy women. These women were given the same information regarding side effects of noise bombardment as were those in the shy misattribution condition, namely, heart pounding and increased pulse.

Procedure

Participant and confederate were met by the experimenter and escorted to a room adjacent to the experimental room. Both "participants" were informed that the study was exploring the effects of noise bombardment on physiological responses. It was noted that several field studies had reported two quite consistent findings. At this point the manipulation was presented. Depending on the treatment, the participant/confederate dyad was told that the symptoms of noise pollution were either "increased pulse and increased heartbeat," or were "dry mouth and slight tremors." Participants were informed that there was no risk involved in the experiment. They were informed, however, that physiological measures would be taken by means of a dynagraph apparatus and that the instrument had been properly maintained so that there was no risk to them. The

instrument's functioning was explained and the electrode attachment procedure outlined and demystified.

In order to provide the subject with an expectation that the symptom arousal due to the noise might persevere even during the time when she and her partner sat together in silence, an alleged "carry-over effect" of noise bombardment was described. Although these attributed physiological changes might extend to subsequent phases of the study, the participants were assured they would not go beyond the experimental session.

Participant and confederate were escorted into the experimental room and acquainted with the physiological apparatus, sound chamber, and intercom system. The laboratory consisted of an experimental room complete with a Beckman Type-R dynagraph and an IAC Series 400 Audiometric Testing Room (sound chamber). An intercom system allowed for communication between experimenter and participant via speakers and microphones. The intercom was also used to present the varying frequency tone stimulus generated by a Heathkit sine-wave generator (Model 1gw/47B). The communication system also allowed for tape recording of the interaction between the participant and confederate. The participant was elected to have her electrodes attached first, since unbeknownst to her, the confederate's electrodes had already been conveniently "attached" prior to the experiment and he had hidden the biopotential skin electrodes from view by wearing slacks and a long-sleeved shirt. One electrode was placed on each forearm (crossing the heart) and a grounding electrode was placed on the right leg. Hewlett-Packard disposable electrodes and American long-life leadwires

with mushroom snap connectors were used. After placing the electrodes on the participant's skin, she was escorted into the sound chamber.

The experimenter began to record her baserate while the "other participant" was being "hooked up." A few minutes later, the confederate was escorted into the sound chamber, seated about 18 inches from the participant, and his electrodes connected to a cable seemingly identical to that of the participant (except his was inoperative).

Next, the four phases of the study were outlined: recording of baserates (3 minutes); introduction of noise (3 minutes); "readjustment of recordings to baserate" (5 minutes); questionnaire completion in the presence of noise (3 minutes).

The "carry-over effect" was again emphasized and then the experimenter exited the chamber and closed its door--thus confining the participant and stranger in the close quarters. After monitoring the three-minute baserate interval, the noise-bombardment phase was announced. The varying frequency tone was then introduced beginning at the lowest frequency (20 Hz), below audible threshold, and ending at the highest frequency (20K Hz), well beyond audible threshold. The continuous tone passed through this range several times during the three-minute, noise-bombardment phase.

Upon completion of the noise-bombardment phase of the experiment, the experimenter explained that she needed to readjust the recordings back to the baserate level and that it would probably take about five minutes. The participant and confederate were advised to wait patiently while the experimenter readjusted the apparatus. No other specific instructions were given. The two remained in the relatively small chamber seated close to each other for the entire five-minute interval.

The confederate was an attractive twenty-five year old male whose presence and proximity should have been shyness-inducing for women selected on the criteria noted above. His behavior mimicked that of a naive participant, a sociology major, also recruited over the phone, but he strictly adhered to a well-practiced script throughout the experiment. He arrived for each session five minutes after the participant, thereby minimizing any social contact prior to the experimental interaction period. His script instructed him "to provide an atmosphere in which the participant may talk if she so chooses. Therefore don't try to prod nor act disinterested. Answer questions briefly so as to allow time for her to participate." He waited twenty seconds before breaking the initial silence, if his partner had not spoken first. During the five-minute waiting interval, the confederate asked six standard questions with about twenty seconds elapsing between the end of her response and his next question (or after his response to a question she had posed). His questions: "Do you know anything about this experiment?" "Are you a psychology major?" "By the way, my name is Larry. What's your name?" "Where are you living this year (which dorm)?" "How has your quarter (term) been going so far?" "What year are you in?" He glanced at his partner at least once every ten seconds if there was no verbal interaction and made eye contact during verbal exchanges.

Following this five-minute social interaction period, a final questionnaire was completed under noise bombardment once again. Participants were thanked for their cooperation and invited to a group meeting where all of those in the study would be present and at which the

experimenter would discuss the final results and their personal implications. A complete debriefing letter was sent to each participant along with an encouraging reminder to attend the debriefing session. A majority of them attended the group session and actively discussed the conception and conclusions of this misattribution study (which they reported enjoying).

Dependent measures

Three types of dependent measures were used, behavioral, physiological, and self-report. The major behavioral indicator of social interaction was total amount of talking. The total number of comments by each participant was extracted from tape recordings of the waiting interval. A comment was defined as a single idea unit. Three subcategories of this overall verbal fluency measure were also scored, including the number of times the participant changed the domain of the conversation; continued the particular topic of conversation, and asked questions. Examples of these three components are: Confederate: "By the way, my name is Larry. You are . . . ?"; Participant: "I'm Debbie" (answer). Confederate: "Where are you living this year?"; Participant: "I'm living in Stern Hall" (answer). "It's quite a nice place to live." (continuing comment). "Where are you living?" (question). Confederate: "I'm living off-campus this year." (eight-second pause); Participant: "I'm enjoying the intro psych course." (changing the domain of conversation). "Are you in the class?" (question). We also noted whether or not the participant broke the initial silence at the beginning of the test interval.

Physiological arousal was monitored by means of direct heartbeat recordings. They were continuously recorded and scored for each of the four discrete phases of the experiment. The primary measure is the change in arousal from baserate to test interval, which corrects for initial individual differences in baserate. These data, however, showed a significant regression effect. Therefore, the residual scores were used as the uncontaminated measure of change in arousal.

Self-report data from the final phase questionnaire were used to check on the efficacy of the manipulation of symptom information and the participant's experience of "noise bombardment symptoms" during the experiment. Other questions inquired into the participant's mood state, her recall of other circumstances in which she experienced similar arousal, and her preference to have participated alone or together with the confederate. Finally, the confederate reported his judgment of whether each participant was shy or not.

Results

Assessment of treatment

When asked on the postexperimental questionnaire to report the usual symptoms of noise pollution, the majority of women in each treatment accurately recalled those symptoms described by the experimenter. Everyone of the not-shy women and eighty-seven percent of those in the shy-misattribution condition reported increased pulse and heart pounding; none mentioned tremor or dry mouth. In contrast, none of the shy women in the misinformed control condition reported either increased pulse or heart pounding while twelve of the fourteen (86%) mentioned the symptoms appropriate to their experimental treatment, dry mouth and/or tremor.

Not only did the participants know what the side-effects of noise bombardment were alleged to be, but over a third of the women reported actually experiencing the specific symptoms they had been led to anticipate. Forty percent of those in the misattribution condition and thirty-eight percent of the not-shy comparison group said they were experiencing either increased pulse or heart pounding, or both. None felt the tremors or dry mouth which, however, thirty-six percent of those in the shyness-misinformed group did report. None of the latter said they felt any change in pulse or heart pounding.

When all reported reactions to noise bombardment were evaluated according to their affective quality, none qualified as positive. Most of the participants in the misattribution condition (80%), as well as those in the not-shy comparison group (81%) described having one or more negative feelings due to the noise. Among these were tension, irritability, distractability, being hot, headache, constricted breathing, and others. Interestingly, relatively few (only five) of the women in the misinformed condition reported such negative symptoms. The purported symptoms of increased pulse and heart pounding are more commonly associated with arousal states than are dry mouth and tremor. Thus, an apparent placebo effect appears to have taken place in which merely believing that the noise would induce those particular cardiac-vascular symptoms was sufficient to engender a state of general arousal.

Verbal interaction measures

"I was more likely to talk because it relieved the noise-produced anxiety."

"The noise kind of made me want to talk to him [the confederate] as a relief from the mechanical noise."

These comments by shy women who had misattributed their social anxiety are similar to those of others in their experimental group, but are quite different from any given by participants in the two comparison conditions. The symptom manipulation significantly modified the pattern of verbal interaction of the majority of women in the shy-misattribution group relative to the shy controls. Indeed, on several measures these shy women with a novel, non psychological explanation for their arousal were as fluent and verbally assertive as comparison women who were not at all shy.

Insert Figure 1 about here

The data in Figure 1 graphically illustrate the profound effect that our experimental treatment exerted upon verbal interaction. As expected, the not-shy controls (NS) talked most ($\underline{M}$ = 26.9 idea units) while the shy-misinformed control (SMI) talked least ($\underline{M}$ = 18.3). The average amount of total talking of 25.7 idea units by the shy-misattribution women (SMA) is thus virtually the same as that of the not-shy women (NS) but substantially more than that of comparable shy women controls (SMI). The overall F value of 11.52 ($\underline{df}$ = 2,42) is significant beyond the .001 level, and the orthogonal contrast which equates the NS and SMA groups (+1) and sets them apart from the shy-misinformed group, SMI(-2), is even more highly significant, $\underline{F}(1,42) = 23.05$. In passing, it should be mentioned that this dependent measure was scored with high reliability, the inter-judge correlation was .93.

When this overall category of fluency was analyzed into its three components, a similarly significant pattern of results was uncovered for the socially important measure of changing the domain of the conversation. Again, the not-shy women reveal the extent to which they attempted to control the conversation by changing the topic 10.9 times on the average compared to the relatively infrequent 4.2 times shy-control women did so. We can see in Figure 1 that the high level of initiating new topics by the shy-misattribution women ($\underline{M}$ = 10.0) approximated that of the not-shy women. A specific contrast which equated the NS and SMA groups (+1) and differentiated both from the SMI group (-2) proved quite robust ($\underline{F}$ [1,42] = 27.42, $\underline{p}$<.001).

There was a non-significant trend for the shy women in the misattribution condition to ask about as many questions as the not shy (means of 8.9 and 8.8, respectively), slightly more so than the shy controls, whose mean was 7.1. No differences were found between groups in the number of answers given or continuation comments made, all means varying about 7.0.

It is evident that once the conversation began, shy women given the misattribution treatment behaved as if they were not shy. However, during the prior period of silence before the partner made his initial statement, rarely did any shy women break the silence while half of the not shy did initiate a conversation (χ^2_C = 5.10; $\underline{p}$<.025). Although incidentally validating our shyness preselection procedure, this measure is the only evidence in the entire study of any similarity between the two shyness groups. Once the ice was broken, the women in the misattribution condition floated along in their interaction with the male partner as if they were not shy.

Altered social cognitions

Though hesitant to break the silence, shy women given an extrinsic explanation for their habitual shyness arousal symptoms behaved in a number of ways that were indistinguishable from that of their not shy cohorts but quite different from controls drawn from the same population of shy women. It is reasonable to conjecture whether such behavioral differences influenced the confederate's perception of his partner's level of shyness. Furthermore, if the women in the shy-misattribution condition unexpectedly found themselves talking freely in precisely the one-on-one opposite sex interaction situation that they had earlier designated as highly anxiety-provoking, they ought to change their cognitions about the desirability of this kind of close encounter. To address these provocative implications of our misattribution manipulation, we turn next to two data sources which reveal the extent to which response styles have been altered by our treatment.

Confederate's perception of shyness. Immediately following each interaction, the confederate indicated whether he judged the partner to be shy or not. He accurately detected all but three of the sixteen not-shy women (81%). This estimate was significantly different from the one he made of the shy misinformed women, the majority of whom he judged accurately as shy ($z = 2.51$, $p<.01$). But his perception of the shy women in the misattribution condition was biased by their volubility and assertiveness. In sixty percent of the cases he mistakenly judged them as not shy or he was uncertain of their shyness status. This statistic does not significantly differ from that which shows his veridical perception of the not-shy ($z = 1.09$, p = ns). In most of the instances

where the confederate evaluated one of these SMA women as shy, they were judged to be "only slightly so," when on our initial screening all participants were chosen because they were at the extremes on the shyness scale.

The basis for these person perception differences becomes evident when we examine the self reports of women in the various groups. A number of those in the shyness control condition made unsolicited reference to shyness (even though they were unaware of our interest in shyness) or social anxiety:

"I prefer to participate alone because I am basically a shy person";

"I feel nervous with people I don't know";

"It [the situation] is uncomfortable because I don't know him and he seemed a little shy";

"The room is small and I feel awkward with someone I don't know."

In dramatic contrast, there was not a single mention of shyness nor social anxiety in any of the protocols from the shy-misattribution group. To the contrary, their experience was enjoyable because of its sociable quality, as revealed in many statements, typical of which are the following:

"I may have felt more nervous had I been alone with no one to exhange smiles with";

"It's nice to share the experience, we had time to get more in depth in conversation";

"I liked being with someone else, it's nice to have a quiet room with someone to talk to after the noise";

"Because we spent time together in a similar, unusual experience--in tight quarters--it's hard not to talk to some extent";

"I prefer being with another 'cause I can see what it [noise] does to another person as well as to myself."

For the not-shy women the situation was hardly as interesting as it appeared to be for those in the shy-misattribution condition. Their self-reports were brief, and described the encounter in rather banal terms: "We talked"; "We just made small talk"; "I had little interest in interacting," "I got bored."

Affiliation preferences. When asked on the final questionnaire to speculate about their affiliation preferences in this specific situation: "Would you have preferred to participate in this experiment alone or with another participant? Explain.", the shy women in the misattribution condition stood apart from those in either of the other groups. As might be predicted, shy controls do not voluntarily choose to affiliate; only two of the fourteen selected this alternative while about thirty percent wanted to be alone. The majority of the shy women in this group are indifferent, they reportedly "don't care." This is also the modal response (for 56 percent) of the not-shy women. But the shy women who, as a consequence of misattributing their social anxiety, talk more and are not perceived by their partner as shy, do care. Fully two-thirds of them endorse togetherness in this situation. Only two prefer to be alone, and a mere three "don't care." The high percentage of shy-misattribution women who prefer to affiliate was significantly greater than both the 14 percent of the shy controls ($z = 2.91$, $p<.01$) and the 25 percent of the not shy ($z = 2.39$, $p<.02$).

Though delighted by the marked affiliation preferences following our misattribution manipulation, we were surprised by the weak degree of affiliation shown among the not-shy women. However, their reports of previous situations in which they felt similar to the way they did in the present experimental situation offers a possible explanation. Recall that eighty-one percent of these women reported negative feelings due to the noise. The comparable situations they describe as eliciting such feelings are those characterized by: "anxiety"; "something bothering me"; "startled when asleep"; "violent movies"; "approached by a stranger"; "being made to perform"; "waiting in long lines"; "someone whistling while I study." None of these situations were mentioned by the shy women in either of the other conditions. Their descriptions were more centered around the noise stimulus whereas the reports of the not-shy women were less stimulus bound. The shy women tended to report loud rock music, airplanes, crowds, and the noise from the dentist's drill as evoking similar feelings.

It appears that the not-shy women became irritated and anxious as a consequence of the combined noise and symptom induction. In some cases, the anxious feelings that accompanied their perceived increase in pulse and heart pounding were not linked to the noise, but were more "free-floating" and unexplained. Previous research (Sarnoff & Zimbardo, 1961) suggests that such anxiety diminishes affiliative preferences. There is another source of data which more directly assesses this presumed increase in arousal among the not-shy comparison group, namely, changes in heart rate over the course of the study.

Heart rate change

We hoped to demonstrate that when individuals who are chronically anxious in a given situation reassess the elicitor of their arousal as non psychological and their reaction as a stimulus-determined, normative one, their level of arousal will decline. In addition, on the basis of our previous discussion, we may also expect to find an elevation of arousal in the not-shy comparison group.

Arousal changes were defined as the difference between each individual's mean basal heart rate (during the first period of this study) and her mean heart rate during the test interval. Because of individual differences in base rates, a regression line was first fit to the data ($Y^1 = .85x + 13.45$). The regression analysis utilized base rate by test interval correlations and not base rate by change score correlations. The following analysis of group differences is based upon these residual scores.

A one-way ANOVA indicates that the three conditions do differ significantly in their change in arousal, as measured by heart rate. The mean residuals are: $\underline{M}$(SMI) = +0.25, $\underline{M}$(SMA) = -1.71, $\underline{M}$(NS) = +1.70. ($F[2,42] = 3.53$, $\underline{p} < .05$).

The shy women who are misinformed about the symptoms of noise do not show a change in arousal. But those shy women with an appropriate extrinsic explanation for their arousal evidence significantly reduced heart rate. The opposite effect occurred for the not-shy comparison group. When t-tests are performed assessing mean observed change against zero change (using a pooled error term, $\underline{df} = 44$), we find: a non-significant t-value of = -.44 for the shy-misinformed group, a

significant t-value of -3.05, $p<.05$ for the shy-misattributed group and another significant t in the opposite direction for the not-shy comparison group, +3.02, $p<.05$.

Specific orthogonal contrasts suggest that the not-shy women differ significantly from those in the two shy groups, who do not differ among themselves ($F[1,42] = 5.93$, $p<.05$; SMI = -1, SMA = -1, NS = +2; $F[1,42] = 1.13$, ns; SMI = +1, SMA = -1, NS = 0). Further comparisons reveal that the not-shy women experienced a significantly greater increase in heart rate than did those in the shy-misattribution condition ($F[1,42] = 7.06$, $p< .05$, SMI = 0, SMA = -1, NS = +1).

Thus two strong physiological effects emerged, the hypothesized reduction in arousal in the SMA group following misattribution of social anxiety and an attendant positive social encounter. Arousal increased in the comparison condition where not-shy women came to believe and internalize the experimental induction of increased pulse and pounding heart, a result, not initially hypothesized . Though definitely linked to the noise in the experimenter's description, these symptoms of arousal became associated in the minds of a number of the not-shy women with other situations characterized by anxiety and distress.

Discussion

It has been demonstrated that by misattributing arousal to an external source, social behavior can be changed dramatically. Shy women, when given an alternative explanation for their social anxiety, talked significantly more than did those in the shy comparison group whose chronic shyness suppressed verbal participation during an interaction with a stranger of the opposite sex. This availability of a tenable

alternative explanation that is affectively neutral, disrupted the previously existing correlations between the shyness label, physiological arousal, and inhibited social behaviors. No longer was the anxiety-based arousal experienced in the interpersonal situation perceived as an indicator of their shyness and no longer did the overt behaviors usually associated with shyness necessarily follow. Once most women in the shy-misattribution group got past the barrier of initiating the conversation (which the misattribution manipulation did not affect), they talked freely, indeed, as much as did the not-shy. They also were as assertive as the not-shy in changing the domain of the conversation, a social control strategy rarely observed among the shy.

Along with these prosocial changes in their behavior, these shy women showed a stronger affiliative tendency than either of the comparison groups. Such positive reactions were judged by a stranger to be more typical of not-shy than shy women, and his estimate of their shyness was biased accordingly; he was less likely to label them as shy. Finally, when these shy women redefined their shyness arousal symptoms as natural consequences of the physical properties of noise, their general level of arousal (assessed as heart rate) was reduced. Thus we may conclude that a cluster of correlated reactions have been significantly altered by modifying only one link in the overall pattern of correlations, that between observed arousal symptoms and an alleged non psychological source of those symptoms.

It is likely that in establishing the empirical S-R connection between noise and physiological reactivity, the usual process of invoking the shyness label was short-circuited and thereby the associated shyness

schema was suppressed. Whether this positive social experience generalizes to other situations or is coded as an "exception" is open for future investigation, as is the therapeutic effects of repeated exposure to similar misattributions in other settings.

The misattribution paradigm, although recent in social psychology, has a long anthropological history of therapeutic application by "medicine men" in healing a host of illnesses, probably psychosomatic in nature. The shaman often attributes the illness to the presence of an evil substance which he pretends to extract from some part of the body, reveal to the victim, and then publically destroy. He may further offer an avoidance ritual in the form of a taboo which, if obeyed, will prevent a reoccurrence of the evil-illness. This simplified view of a culturally complex phenomena contains the essential ingredients of an effective misattribution paradigm. The source of one's arousal is perceived to be a discrete, isolatable stimulus (as was the noise in the present study) which is manipulable by a benign person or one's self. Arousal or illness is an understandably direct function of this stimulus--as if it were "hard wired" and not subject to the "soft wiring" of the victim's motivation, desire, belief, or of individual personality differences. The afflicted individual assumes a passive victim role in which personal responsibility is eschewed. The reaction is defined as normative, shared by comparable others and thus not evidence of unusual, idiosyncratic properties of the person. The use of a taboo ritual provides a socially sanctioned set of low frequency avoidance reactions that replace those phobic reactions individuals in our society are personally responsible for generating. Although passive in their presumed role in the etiology

of the illness, the afflicted individuals may be involved as active participants in the curative process, such as helping to burn the offending pine needle seemingly extracted from their stomach or throat. Similarly, in our experimental paradigm, the misattribution manipulation may, in future uses, be strengthened by having the noise source controlled by the client-participant.

Two further issues warrant mention, the contrasting reactions in affiliative tendency and physiological arousal between the woman in the shy-misattribution group and those in the not-shy comparison group. The strong degree of affiliation shown by the former group may be a simple outcome of the positive experience with their partner when evaluated against a history of relatively few such positive one-on-one interactions with a member of the opposite sex. Or, more interestingly, it may be a by-product of the transformation of their high level of social anxiety into a more objective source of distress.

This transformation of motive states was experimentally demonstrated in an early study of misattribution processes conducted by Bromberg (1967) in which unconscious neurotic anxiety was changed to objective fear of an imminent source of physical pain. When their anxiety was free-floating, that is, unbound to a specific external object or was of a phobic nature, subjects chose to isolate themselves rather than to affiliate with others going through the same experience. However, when the anxiety was misattributed to the inherent threat of anticipated painful electrical shocks, subjects preferred social affiliation. The affiliation preference was greater than that shown by comparable subjects given the same fear induction but in the absence of prior arousal of anxiety.

In our study when the non-shy women believed that noise induced those symptoms commonly associated with a variety of arousal states, increased pulse and heart pounding, they not only became more physiologically aroused, they interpreted this arousal in negative affective terms. It was surprising to see them describe as comparable experiences those we would characterize as anxiety-related, where the source is vague, general and threatening to esteem maintenance.

Maslach (1979) has shown that hypnotic induction of only two symptoms of arousal--increased heart rate and respiration--was sufficient to cause her subjects to label their unexplained arousal negatively. If our non-shy participants similarly labelled their emotional reaction negatively and only partially attributed it to the noise source, some of their reactions may have taken on the quality of free-floating anxiety or phobic anxiety. Bromberg's data (1967) along with those of Sarnoff and Zimbardo (1961) reveal that such anxiety states predispose one toward a preference for social isolation rather than affiliation.

It is curious to consider that the same manipulation which provided an appropriate explanation for the chronically shy, was a source of inadequately explained arousal for the not shy. These usually sociable people, though interacting freely with their partner, did not particularly enjoy the social exchange (as their self reports reveal) nor did they express much desire for affiliation with the partner. The general issue of how the specific noise-arousal correlation "spilled over" to make salient other negatively experienced psychological events deserves further systematic study.

In the context of our introductory remarks, we have intentionally broken an existing correlation between arousal, source, and label to

witness a rather extensive change in socially relevant behaviors, cognitions and physiology. On the other hand, in our comparison group it appears we may have unintentionally resurrected a link between the generic properties of our specific arousal source (distress, annoyance, irritability, hostility, lack of controllability) and correlated reactions in situations phenotypically dissimilar from our experimental setting.

Oliver Wendell Holmes (1858) reminds us that "Every person's feelings have a front door and a side-door by which they may be entered." While closing the front door by which the feelings of inadequacy of the shy are so obviously entered, we have inadvertently opened wider the side door (or maybe the basement) through which the ordinary non-shy person occasionally slips in and out many feelings that would not be worthy of admission upfront. Exploration of the misattribution of unconscious motives poses a challenge for future investigators of experimental social-psychopathology.

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Notes

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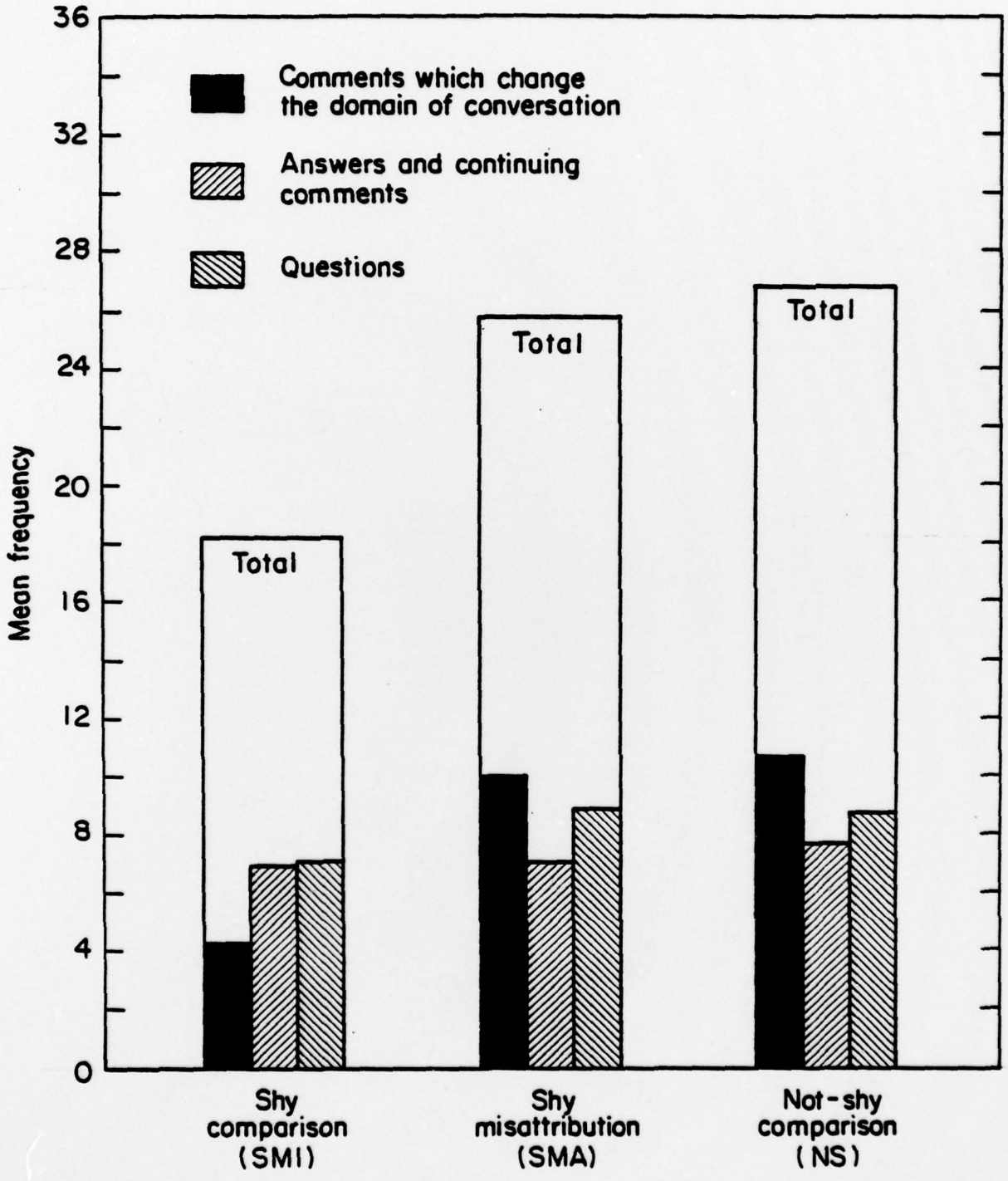
Figure Captions

Figure 1. Mean frequency of verbal interaction measures for each treatment group analyzed separately by total comments and conversational components.


36
32
28
24
20
16
12
8
4
0
Mean frequency
Comments which change the domain of conversation
Answers and continuing comments
Questions
Total
Total
Total
Shy comparison (SMI)
Shy misattribution (SMA)
Not-shy comparison (NS)

F
2